Online Testing

Technology Readiness Analysis

For

Bamberg School District 1

Overview of Bamberg School District 1

Bamberg School District 1 is located in the southwest part of the state with the District Office located in Bamberg, SC. As of February 2016, the district is comprised of 3 schools, serving approximately 1,365 students. Test scores for students in grades 3-8 in the district were above the state average in English, Math, Science, and Social Studies, but below the state average in Reading and Writing in 2015 and leadership is working aggressively to take the appropriate measures to enhance the learning experience and increase student achievement rates in 2016.

Key Data Points

- Phyllis K. Schwarting has served as Superintendent for 15 years
- District Poverty Level is 79%
- Teacher Retention Rate is 93%
- Breakdown of schools:
  - Richard Carroll Elementary, 5 years old, grades PK-6, 725 students
  - Bamberg Ehrhardt Middle School, 55 years old, grades 7-8, 215 students
  - Bamburg Ehrhardt High, 55 years old, grades 9-12, 425 students

Participating District Personnel

Name of District Staff Member	Roles/Responsibilities
Ricky Albertson	Director of Technology (Resigned April 2016)
Randy Johnson	Director of Technology

Purpose of This Analysis

The purpose of this analysis is to provide an independent evaluation of the ability of Bamberg School District 1 to organize and conduct online testing for their students in grades 3-8 starting in the spring of 2017. Federal online testing guidelines will take effect in 2018 but South Carolina's legislature has implemented plans for all districts to begin formal online testing in March of 2017 for Math and ELA classes inclusive of all students in grades 3-8. This proactive technology analysis will benchmark a district and their schools in several key areas and provide a technology readiness score that will ultimately lead to a roadmap of detailed tasks and deliverables that are necessary to improve any of the deficient areas.

The three specific objectives of this analysis are:

1. Analyze the strengths and weaknesses of the school district and quantify their ability to carry out the online testing activities in 2017 and beyond while documenting any major gaps in "readiness."

2. Work with the district to identify recommendations to bridge the gap between where the district is and where they need to be in terms of technology readiness to carry out these activities.

3. Collaborate with the district to put in place a blueprint for completing any tasks (or procurements) necessary to achieve "technology readiness."

Analysis Background

During the 2015 budget planning period, Superintendent Molly Spearman championed the General Assembly to consider the request of reserving a portion of the K-12 Technology Initiative funds for the purpose of providing technology technical assistance to rural and less affluent districts of need. After funds were allocated through the Proviso, the Superintendent's office called together a small Advisory Task Force to begin exploration of a plan of action to implement the initiative. The Task Force included South Carolina Department of Education (SCDE) staff, representation from rural school districts, legislative representation, and private sector.

The Proviso states:

"1.94. (SCDE: Technology Technical Assistance) Of the funds appropriated for the K-12 Technology Initiative, the department is authorized to withhold up to $350,000 in order to provide technology technical assistance to school districts."

The purpose and spirit of the Proviso is for the SCDE to provide technology-consulting services ("technology technical assistance") to school districts that would otherwise struggle in securing such services and resources. In particular, consulting services would initially focus on evaluating the state of technology, in participating districts, as it relates to readiness for standardized, online assessments beginning in 2017 and the capacities to offer quality computing based instruction, including Wi-Fi availability for support of instruction.

Proposed District Participants:

While there are a substantial number of rural-based districts in the South Carolina public school system, funds allocated for this year's initiative may not be adequate to offer high quality and much needed external, independent consulting services to all districts of need. Therefore, it is recommended that initial focus be placed on the plaintiff districts involved in the lawsuit between districts and the state (Abbeville vs. South Carolina.) and any other rural districts identified by the State Superintendent's office. As time and funding are available, other rural districts may be included. There were initially at least 30 districts involved in the state suit and about 9 remained by the end of the suit. All of the original Abbeville Law Suit districts have been given the opportunity to participate in the Online Testing Technology Readiness Analysis.

Proposed Consulting Resources/Partners:

The South Carolina Department of Education did not have adequate staffing to fully offer technology consulting services of this magnitude. Therefore, it was suggested that SCDE seek and secure external, independent contracted services to facilitate this initiative. The state interviewed several industry-consulting resources and opted to leverage a lead consultant who helped the state with the analysis and writing of the Educational Technology Plan for years 2014-2017. Robert Cardelli was contacted in late 2015 and the consultant team was finalized and officially began work the second week of November 2015.

Initial Outcomes:

As a result of the initiative, each participating district receives a personalized report detailing the consultants' findings and recommendations as to the district's technology readiness for state and other online assessments, 1:1 computing, and enhanced Internet connectivity (Wi-Fi) for the support of instruction in their schools. A blueprint outlining specific steps the district and their schools need to focus on is presented to the district's superintendent as part of the final report.

Evolution of Online Testing Requirements

No Child Left Behind legislation required states to measure students' progress in reading and mathematics annually in grades 3-8 and at least once in grades 10-12 by 2005-2006. The *Every Student Succeeds Act* (ESSA) maintains the requirement that each state implement "a set of high quality student academic assessments in mathematics, reading or language arts, and science" (114th Congress, 2015, p. S.1177-24) among its provisions. Further, mathematics and reading or language arts assessments will be administered in each of grades 3-8, and at least once in grades 9-12.

Beginning in the 2014-2015 school year, learners faced a new testing challenge in that their assessments of learning will be via online testing of the Common Core standards. Assessments are being developed by organizations such as PARCC, DRC, ACT and SBAC. Tests may take learners from 8-10 hours to complete and must be integrated into the school's daily and weekly calendar of events to complete the necessary activities. (Doorey, 2014; Gewertz, 2013). Online testing has posed concerns about required technology, sufficient bandwidth, computerized test security, learners' technology skills, and new forms of test anxiety.

States Must Become Familiar with Updated Legal Policies for Computerized Testing

Computerized testing raises new issues that require updating of test security laws and policies, as policies written for standardized testing administered via paper-and-pencil are no longer sufficient. ACT has a highly relevant report in this regard: The End of Erasures: Updating Test Security Laws and Policies for Computerized Testing by Michelle Croft (2014).

Croft (2014) outlined many concerns, noting that computerized testing does not eliminate cheating and test piracy. Such practices just take on different forms. Unique risks include such things as educators logging in to tests to view questions or change student responses, computer hacking, keystroke logging, printing, emailing, or storing test information in a computer outside the test delivery system. There is a greater risk of students accessing the Internet and other programs during testing. There is great concern about students using their own devices for testing and who has administrative privileges. Technology staff and teachers need to consider how testing workstations need to be positioned and secured so that students can't see what's on the monitors of others.

Croft (2014) recommended that states update their state statutes and regulations to reflect the shift to computer-administered assessments, concentrate efforts on controlling test access, and ensure that there is a single test security section within the updated manual that contains answers for any question that a test administrator has about test security. For example, policies should consider how student login information is secured. There should be rules on how tests are reactivated if disrupted. Additionally, these rules should emphasize having more than one proctor aid in the reactivation, and most importantly, proctors should maintain a log of all reactivations to provide documentation in the event of an investigation. Likewise, the technology should be secure and the testing window should be as short as possible to reduce the likelihood that items are compromised. Finally, states should implement steps to actively monitor test access issues through data reports to determine if there have been excessive logins or logins at times when testing should not occur (e.g., on the weekends), and have clear policies in place detailing how violations will be handled.

The test security section should also include an itemized list of what materials are secure (e.g., work folders, student authorization tickets with IDs and passwords, session rosters, scratch paper, reference sheets). "Information about who can access the test should be clearly articulated across the school and communicated to all proctors on the day of testing. In addition, there should be information on how to report test security concerns and possible violations, which can be applicable regardless of the testing format" (Croft, 2014, p. 4).

It is vital for states to adequately prepare districts and schools for the evolving testing requirements and to proactively ensure educators and students are familiar with any new policies regarding computerized test administration, including what they, test proctors, and students may and may not do. Having these policies and procedures in place is critical to the success of the testing process and the legal implications for violating any of these policies are potentially severe. Advance planning and communication is required to minimize the risks associated with testing. Any technological failures in the administration of the tests could spark an outcry to invalidate the results; especially considering that high-stakes test scores are factored into school grades, teacher salaries, and federal assistance to the state. The stakes are too high!

Changes in E-Rate Rules Will Affect Funding for Districts

The federal E-Rate Program started redirecting funding support FY 2015 (7/1/2015-6/30/2016) to focus on high speed broadband connectivity and Wi-Fi to tackle the digital divide concern. This included no longer providing funding or reducing funding support for outdated, legacy, and non-broadband related services such as…Page 12 ref: https://apps.fcc.gov/edocs_public/attachmatch/DA-14-1556A1.pdf ***FCC Order 2015, 2016:http://www.usac.org/_res/documents/sl/pdf/ESL_archive/EligibleServicesList-2016.pdf

Page 2 summary reads as follows:

"The E-rate program: (1) restructured the former Priority One and Priority Two categories into Category One and Category Two; (2) eliminated Category One (former Priority One) support for outdated, legacy, and other non-broadband services including web hosting, email, and paging; (3) adopted a phase out of support for Category One voice services; and (4) limited Category Two support to the internal connections needed to enable high-speed broadband connectivity within schools and libraries, specifically LAN/WLAN (local area networks/wireless local area networks)-focused components (broadband internal connections components), basic maintenance of eligible broadband internal connections components, and managed internal broadband services."

Services and Components No Longer Eligible for Support (Effective Funding Year 2015)

Category Two (Priority One)	Category Two (Priority Two)
Services and telephone components that were listed as eligible in the former Priority One category: • 900/976 call blocking • Custom calling services • Direct inward dialing • Directory assistance charges • Email • Inside wire maintenance plans • Paging • Text messaging • Voice mail • Web hosting	Components included in these former Priority Two entries: • Circuit Cards/Components • Data Protection (all except for firewall and uninterruptible power supply/battery back-up) • Interfaces, Gateways, Antennas (other than as specified in this Order) • Servers (other than servers necessary for caching) • Software (other than the software that supports eligible broadband internal connections) • Storage Devices • Telephone Components • Video Components • Voice/video IP components (that had been listed in the Data Distribution entry)

Many districts have relied on this funding support since the start of the E-Rate program 18-years ago. Some districts rely on this funding reimbursement to purchase additional technology/services. Others used this to pay for operational (staff, etc) expenses.

Eligible voice services are subject to an annual 20 percentage point phase down of E-rate support beginning in funding year 2015, as described in the *E-rate Modernization Order*. The reduced discount rate for voice services will apply to all applicants and all costs for the provision of telephone services and circuit capacity dedicated to providing voice services.

South Carolina's Testing Requirements

The South Carolina College- and Career- READY Assessments (SC READY) are statewide assessments in English language arts (ELA)* and mathematics that will meet all of the requirements of Acts 155 and 200, the Elementary and Secondary Education Act (ESEA) , the Individuals with Disabilities Education Improvement Act (IDEA), and the Assessments Peer Review guidance.

All students in grades 3–8 are required to take the SC READY except those who qualify for the South Carolina National Center and State Collaborative (SC-NCSC).

SC READY Assessments are not timed, and both computer-based and paper-based testing will be available. Data Recognition Corporation (DRC) is the contractor.

*** The ELA test will be a two-day test: Session 1 (Writing) and Session 2 (Reading) for all grades.**

Estimated Times for the SC READY Assessment*

Grades	ELA Session 1	ELA Session 2	Mathematics
3-8	2.5 hours	2.5 hours	2 hours

*The SC READY assessments are not timed. The Office of Assessment is providing estimated times to assist with classroom scheduling. Since there are no previous testing times to serve as a guide for SC READY, these estimates represent the Office of Assessment's best approximations. "Start" and "Stop" times will be collected this year so that more accurate estimated times may be provided in the future. Please note that SC READY includes some new item types designed to measure a more demanding set of standards. As a result, it is anticipated that in the first year of SC READY, students may require longer testing times than in previous years.

Links:

http://ed.sc.gov/tests/middle/sc-ready/sample-items/
http://ed.sc.gov/tests/middle/sc-ready/
http://ed.sc.gov/tests/middle/adoption-list-of-formative-assessments/
http://ed.sc.gov/scdoe/assets/File/tests/assessment-information/test-dates/SCREADYDates15-16(1).pdf
http://ed.sc.gov/tests/elementary/general-information/

Overview of Technology Readiness Analysis Team

A team of independent consultants has been hired by the State of South Carolina to conduct all aspects of this assessment. The objectivity that outside resources bring to the table has helped reduce the perception that "big brother" is searching for negative data points on a district's leadership team. The use of third party resources has helped foster open and honest dialogue and allowed the district staff and consultants to collaborate in all aspects of the process. The team is comprised of the following individuals:

- **Rob Cardelli**

  - Project Manager overseeing all facets of the analysis
  - More than 20 years of education and government consulting expertise
  - Personally worked with over 100 education customers including helping the Department of Education in South Carolina gather requirements and write the State's Educational Technology Plan for years 2014-2017

- **Brenda Bryant**

  - Local school teacher in Richland 2 school district
  - Focusing much of her attention on the readiness of students and teachers along with professional development concerns

- **Bob Jones**

  - Local I/T and Management Consultant with over 30 years of experience
  - Focusing much of his efforts on the infrastructure, hardware, security and funding concerns
  - Expert in data analytics and reporting

- **Heather Sutton**

  - Local I/T consultant currently residing in the Orangeburg 4 district
  - Focusing much of her effort on facilities, staffing levels, strategic planning and testing policy readiness levels
  - Expert in data analytics and reporting

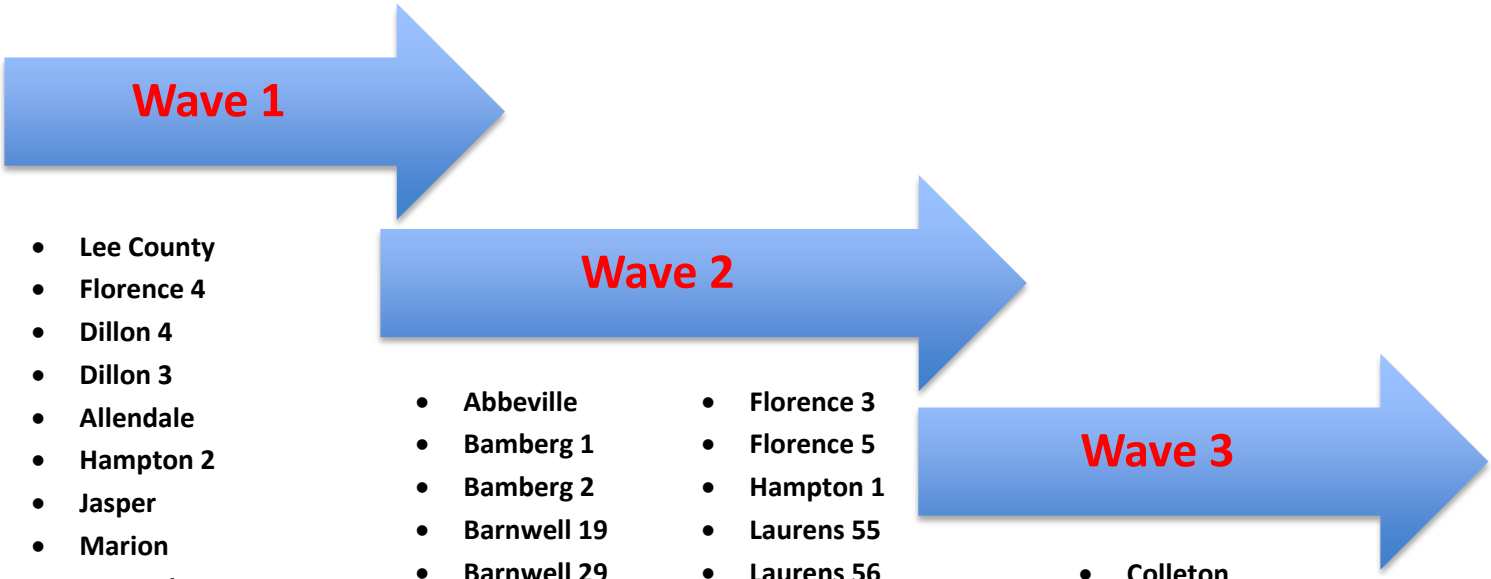
Participating Districts

The school districts that the state has identified as potential candidates for these optional readiness analysis studies have been prioritized into the following three categories:

- **Wave 1-** Includes the nine school districts that were still involved with the Abbeville Lawsuit at the time of the verdict

- **Wave 2-** Complete list of all districts participating in the Abbeville Lawsuit at any point in time over the last 20 years

- **Wave 3-** Other districts categorized as impoverished



Wave 1

- **Lee County**
- **Florence 4**
- **Dillon 4**
- **Dillon 3**
- **Allendale**
- **Hampton 2**
- **Jasper**
- **Marion**
- **Orangeburg 3**

Wave 2

- **Abbeville**
- **Bamberg 1**
- **Bamberg 2**
- **Barnwell 19**
- **Barnwell 29**
- **Barnwell 45**
- **Berkeley**
- **Clarendon 1**
- **Clarendon 2**
- **Clarendon 3**
- **Chesterfield**
- **Florence 1**
- **Florence 2**
- **Florence 3**
- **Florence 5**
- **Hampton 1**
- **Laurens 55**
- **Laurens 56**
- **Lexington 4**
- **Marlboro**
- **McCormick**
- **Orangeburg 4**
- **Orangeburg 5**
- **Saluda**
- **Williamsburg**

Wave 3

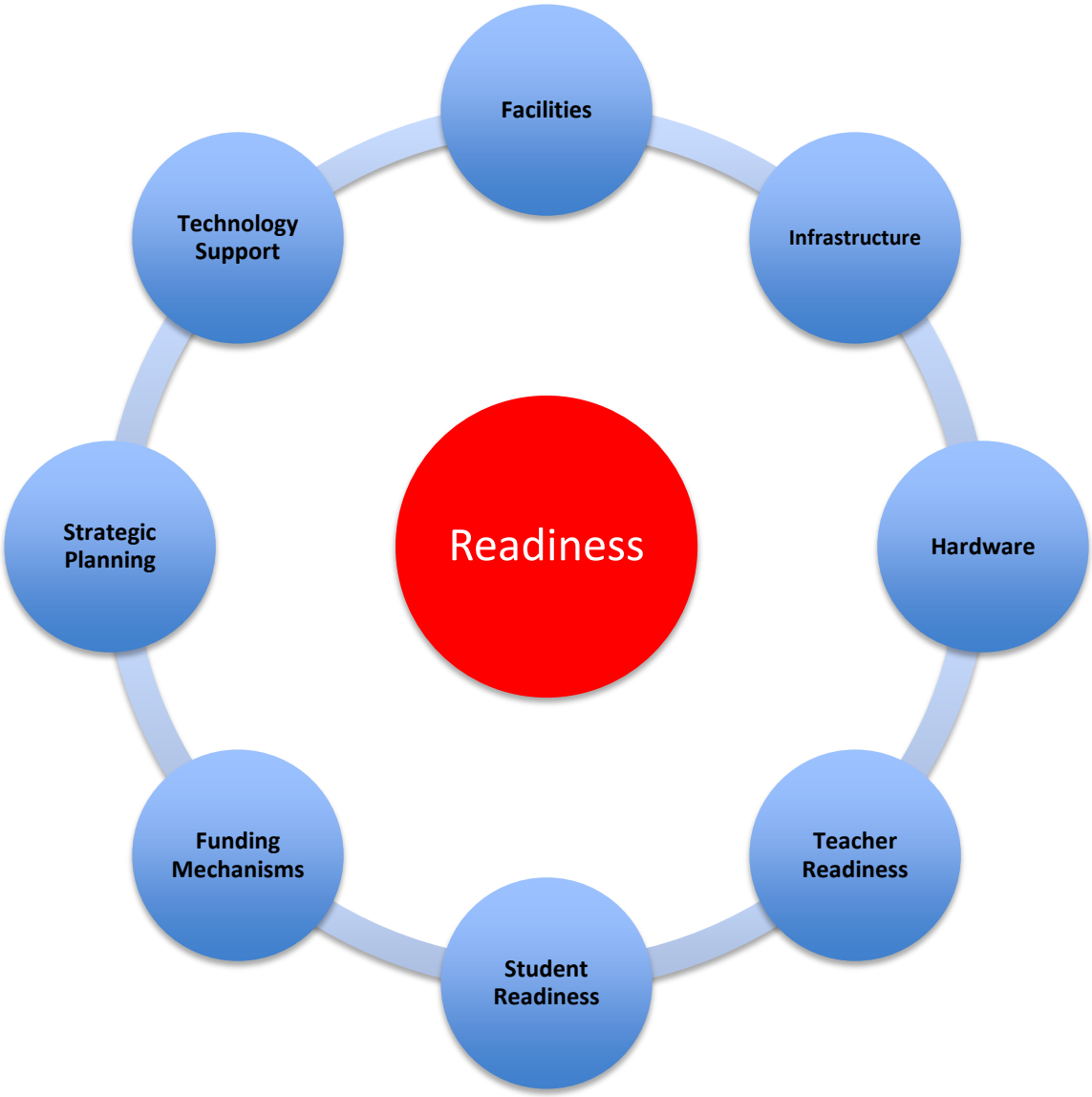
- **Colleton**
- **Calhoun**
- **Edgefield**
- **Sumter**
- **Darlington**

Analysis Methodology

The consultants worked with several of the Wave 1 districts to design and ultimately refine a methodology that allows for rapid data gathering with multiple collaboration opportunities for district staff to review the findings and edit the documentation to ensure the report accurately reflects the current state of the district. The consultants realize how busy the district staff are and created a methodology that is non-invasive in nature and flexible to allow the participants to work around their "day jobs" to reduce the impact on their daily operations.

Primary Areas of Focus

The technology analysis team identified several categories that are critical for a school district to achieve technical readiness for online testing. Within each category there are multiple variables that directly impact that category's degree of readiness. Accurately documenting these variables helps paint a picture of the overall level of readiness of the school district and also can be used to craft a blueprint for improving those deficient areas. The graphic shows the eight (8) categories currently being used to measure the degree of readiness. The following pages provide details surrounding the variables that are being analyzed during the analysis process.



Categories and Variables Being Measured

Note: These are generic categories and questions being asked are not specific to any one district. Each bullet point receives a score that is averaged for the overall section.

❑ Impact of Facilities

- How does the availability or lack of space impact the district's level of readiness?
- How does the age of the schools impact cabling, wireless, and ability to connect to the Internet?
- Does poor air conditioning or ventilation in server rooms, network closets, or computer rooms present a risk to the availability of the computers for testing?
- Are there situations where rodents chew through cables and bring down the district computer network? How long is the network down and what is the frequency of these events?
- Are there leaky ceilings, poor flooring, mold, or other environmental conditions that could impact the testing facility?

❑ Readiness of Infrastructure

- How does the amount of available network bandwidth impact the testing strategy?
- Are there any risks to testing due to the "up time" of the district (or school's) network?
- How many simultaneous testing machines can a district handle during any block of time?
- Does the district need additional wireless access points to conduct testing activities?
- Do the age and type of routers or switches impact the performance of the network and the ability of students to test in a given timeframe?
- Does the current wiring/cabling of the network impact the overall system performance? Is there anything that needs to be improved to enhance the testing experience?
- Is there any evidence that the security of the district's networks or computers could impact online testing?

❑ Readiness of Existing Hardware

- How does the number of available computers directly impact the district's ability to test?
- Is there a need to upgrade the available memory (RAM) in the testing computers? How much memory is currently in the testing machines and what (if any) performance issues have been witnessed?
- Are there any concerns over the size or quality of the testing monitors?
- Is there evidence that the different types of equipment being used for online testing directly impact the staff's ability to support the technology? Are there multiple products in use overcomplicating the support strategy and overall skills of the district staff?
- Do the current operating systems of the testing computers limit the ability to test? Are there any upgrades being planned and when will these take place?
- Are there adequate backup testing machines and/or accessories to ensure the necessary number of devices on the day of testing?
- Are there any procurements currently being contemplated and will they need to be amended to reflect changes to the testing strategy?

❑ Teacher Readiness

- Are the teachers adequately prepared for 2017 online testing requirements?
- Do the teachers require professional development training to educate them on how to better leverage technology?
- Do the teachers require assistance creating and conducting computer literacy classes for their students?
- Does the district have funding to offer computer literacy?
- What is the turnover rate of the teachers? How does the turnover rate impact the district's testing strategy?
- How do the teachers interact with the district technology staff?
- Are teachers aware of testing policies and are they properly prepared to manage testing cycles?
- Do the teachers need assistance in preparing their students for computer literacy?
- Are there any other concerns related to a teacher's knowledge or ability to assist with online testing?

❑ Student Readiness

- How does the level of computer proficiency of the student's impact online testing? Are there any concerns that students are not properly prepared to take a test on a computer?
- Does the district offer kindergarten through second grade computer classes?
- Is there any proactive analysis to identify disadvantaged students in a classroom with little to no computer literacy? What, if anything, is the district doing to help these potentially at risk students?
- Does the district allow students to check out computers to take home?
- How does a district manage situations where two different teachers leverage technology differently? Is there any analysis into the student's technology proficiency between these two scenarios?
- Does the district offer practice tests to allow the students to get familiar with the testing process and what is expected of them?
- Are students aware of testing policies and the implications?
- Is there any evidence from previous online testing cycles that students need assistance in specific areas? Examples might include: typing skills, knowledge of scrolling or potentially how to properly use a mouse.

❑ Technology Support

- How many resources are available at the district level and what are their roles and responsibilities?
- What are the main skills of the staff? Are there any skills missing in the support model?
- What functions are outsourced?
- What kind of help desk system is in place and how many ticket items are open?
- How many job duties does the staff have to perform?
- Does the district staff have any assistance from within the school?
- What would the impact be on the school's ability to test if a key resource were to call in sick or resign during the testing window?
- Are there any concerns about the availability of technology staff to support the testing process?
- Are policies and testing procedures documented and disseminated to all staff?
- Are students and their families made aware of the testing policies and schedule?
- Does the technology support team regularly communicate their needs to the administration and/or school board? What is the relationship between these parties?

❑ Funding Mechanisms

- Does the district leverage all available e-Rate funds?
- How has the district utilized e-Rate funds in the recent past?
- Does the district have experienced grant writers?
- How have technology related grants been utilized in the recent past?
- Are there any funds from e-Rate or grants that have NOT been utilized but could be leveraged to help improve the overall readiness of the district for online testing?
- Who writes the e-Rate documentation and grants? Internal or external resources?
- Are there other sources of funds the technology staff has access to and for what are they used?
- How does the district determine how the funds will be utilized?
- Are there any situations where money earmarked for technology is denied and utilized for non-technical district needs?
- What is the role of the technology staff in setting budgets and preparing for online testing needs?
- Is there a formal mechanism for cross training multiple district staff in the rules, regulations and nuances of applying for e-Rate, grants or other funding sources?
- How are the district's funds allocated for student computer literacy being spent?

❑ Strategic Planning

- Does the district have an up to date district wide strategic plan?
- Does the district have an up to date district technology strategic plan?
- Are the district's strategic plan and the TECHNOLOGY strategic plan properly aligned?
- What is the level of involvement of the local school board?
- Who is involved in strategic planning?
    - *Superintendent?*
    - *Teachers/Faculty?*
    - *I/T staff?*
    - *Local Vendors?*
- How does the district proactively plan for new technology acquisitions?
- How do the schools leverage district I/T staff?
- How are students or teachers leveraged?
- How are local technology vendors utilized?
- What is the level of involvement with the local "consortium"?
- How does the technology staff procure hardware or services?
- Is there a risk of "single point of failure" with the district staff member?
- Does the district need specific training in proper strategic planning?
- What assistance is required from the state?

Overview of Readiness Rating Scale

To evaluate the readiness of a district in multiple areas the team created a rating scale to objectively measure how effectively (or ineffectively) a particular area rates compared to other districts. After each area has been given a score the analysis team compiles the statistics and averages them to derive a final readiness score for the district. To simplify the process the consultants used a scale of 1-5 that increases in increments of half a point. The following scale will be used to track future readiness decisions:

Rating	Description
1	The district is unable to prove they can successfully complete online testing in 2017.
2	The district could feasibly conduct testing in 2017 but there are multiple areas that need to be improved to make this happen and if they are not completed testing will more than likely be unsuccessful.
3	The district will be able to meet the 2017 Online Testing requirements. The district will not be able to handle additional subjects or grade levels without significant improvement in multiple areas.
4	The district will be able to meet the 2017 Online Testing requirements and they can meet a few extra subjects or grades but not all future needs.
5	The district is prepared for 2017 and beyond. They do not have any measurable risks associated with Online Testing for 2017 or beyond. They can handle online testing for all grades and subjects.

Summary of Findings for Bamberg School District 1

Overall Readiness Score	2.4

Impact of Facilities

Readiness Score	3.0

Area of Focus	Observations	Recommendations
Availability of Testing Labs	• The district currently has 11 labs, 5 of which are at the high school, 3 at the elementary school, and 3 at the middle school. • There is a lack of space to dedicate to computer proficiency classes. The only rooms for educating students on computers will be required for testing. Due to the scheduling challenges and space limitations, testing in some labs may displace students from a regular computer class. • The district lacks the space to add additional labs for testing	• Bamberg 1 does not have additional space for labs, nor do they currently have enough labs to test. The district will need laptop carts in order to test online. • The only other viable options would be purchasing and utilizing mobile trailers. This option works well for some districts and schools where space is an issue. The consulting team recommends laptop carts though because of the multiple uses that can be derived from the extra machines and the simplicity of managing the carts.
Age of Buildings and Impact on Cabling and Wireless Connectivity	• The district has 3 schools, 2 of which are over 50 years old, both have been remodeled in the past 20 years. • The Elementary School was built 5 years ago. • The wireless network in the district desperately needs to be replaced. The director of technology has done an amazing job strategically placing the wireless access points throughout the school to ensure all have the ability to access the wireless system.	• The data closets that need improved ventilation must be fixed. The risk of technology overheating and degrading or completely taking down the computer systems is very real and could impact testing. • A new wireless system must be installed. With the lack of testing labs, the district will have to rely on laptops in order to test online. • Load testing needs to be performed as soon as all wireless access points are installed, to ensure everything is working. It is possible additional access points may be needed to combat the architectural challenges of the

		current schools. All buildings are built using concrete block so access points need to be installed in every classroom and testing space.
Environmental Concerns (i.e. mold, air conditioning and ventilation concerns, excessive noise)	• Several schools have leaky ceilings in the classrooms and the data closets. • Ventilation is a concern in all data closets. • Students have to deal with the constant humming from florescent lighting in the rooms. The noise is a considerable distraction and could negatively impact students that are testing.	• Maintenance from the state department of education should have someone evaluate the schools to ensure there are no mold issues. • Administration should explore expanded power supply options and ensure backup systems are firmly in place. Administration should discuss the potential impact of the distracting noise in the rooms. They should assess if this is a big enough issue to disqualify rooms for testing. The consultants believe any students taking tests in those rooms are at a disadvantage.
Condition of desks and chairs where students will be testing	• Furniture in labs is extremely old and unmatched. While this might not seem like a major impact on testing there is evidence to suggest standard-testing environments must be in place to properly gauge the effectiveness of student testing. Students taking tests in rickety chairs or squeaky desks could be at a disadvantage.	• New furniture is needed for labs that will be used for testing • New desks will be needed for classrooms that will be used for testing.

Infrastructure

Readiness Score	2.5

Area of Focus	Observations	Recommendations
Available Bandwidth to the district	• The district currently has 150 MBPS bandwidth, which is the maximum amount funded by the state based on student count.	• Formal analysis of the network's configuration to determine if the available bandwidth is able to meet the needs of the district during online testing activities. Contracting with 3rd party experts may be necessary to ensure the routers, switches, access points and cabling are properly integrated and successfully maximizing the available bandwidth. Corrective action should be taken to further "tune" the networks and support components. There are specialized tools available to help assess a network's efficiency and it may be necessary to leverage a 3rd party to help justify purchasing additional incoming bandwidth to rectify the performance challenges.
Stability of Networks Within The Schools	• The district has very limited wireless access. The wireless access points have be strategically placed throughout each school to maximize the network uses. Any online testing must be done on hardwired computers.	• The district has to have a new wireless network installed in order to test online in 2017. The district does not have testing labs or additional space to set up labs.
Available Bandwidth to the Schools	• The district currently has 10GB bandwidth being pushed out to the schools.	• As more subjects are added, performance testing will need to be performed at each school location to determine how much bandwidth is needed at each school. The district currently believes there is a risk to testing the current population. Additional network

		hardware might be needed to expand the capabilities and efficiency of the district's network.
Cabling Challenges	• Due to the age of most buildings, cabling has been a challenge. The schools have done the best they can, given the structural challenges, but it's a very challenging situation and there are clear issues with the network connectivity and what can be accomplished due to these limitations. • It's important to point out the distinct is trying to be cost effective. There are certainly firms in the marketplace that can handle many of the issues but it's likely these would be very costly and more than likely cost prohibitive.	• The consultants recommend the district engage a firm to formally evaluate the network cabling challenges and provide a cost comparison between going heavily wireless or continuing to invest in the hardwire cabling
Wireless Networks • Routers • Access Points • Bandwidth • Switches	• The consultants received enough information to highlight concerns around availability of bandwidth. • Access points are being added in every classroom and should be complete by the end of the school year. • The lack of bandwidth is noticeable when using a wireless model.	• Load testing to see if more access points are needed • Increased bandwidth should be explored once the other hardware issues have been addressed. The new hardware should be able to accommodate significantly more bandwidth. It's important to do the hardware first and THEN the expanded bandwidth.

Hardware

Readiness Score	2.5

Area of Focus	Observations	Recommendations
Number of Computers Available for Testing	• District wide there are 220 computers district wide that could potentially use for testing. • The district does not have laptops or laptop carts.	• A hardware refresh plan needs to be created. The district currently does the best they can but a formal plan needs to be created to handle the future management and philosophy towards consistently replacing district technology. • Laptop carts are needed in all schools. The district needs to identify exactly how many are needed and begin the acquisition process. Back up hardware and equipment, such as batteries needs to be available during testing. This is not a nice to have recommendation. It is mandatory that backup systems exist or the risk to students not being able to test is very real.
Age and ability to upgrade computers	• All computers are 4 years of age and older.	• A consistent and well thought out technology refresh strategy should be created and approved by the superintendent and communicated and approved by the school board.
Available RAM (Memory) in testing computers	• All computers have at least 4 gig of ram. • There are a large number of computers with inadequate memory to handle expanded bandwidth and the heavy reliance of video within the classroom.	• The consultants recommend the district strive for a minimum of 8 gig of memory on all future computers. Wherever possible we suggest trying to upgrade the existing computers IF it's a cost effective solution. Many times adding memory to an existing computer is NOT necessarily cost effective if you can buy a brand new laptop with a faster processor for a price of half as much as simply adding memory to an older machine.

		• Careful analysis is needed to ensure a proper strategy is implemented.
Disaster Recovery Solution	• The district does not have a disaster recovery plan in place. • If the system goes down during testing the district may need to halt testing. The risks associated with not having a viable DR solution are extensive and should not be ignored	• The consultants recommend Bamberg 1 collaborate with their peers in other districts who also need remote disaster recovery solutions to obtain a discounted vendor contract. • A formal DR policy and plan is needed and the consultants believe the state government should have a role in providing assistance in this area. The majority of districts interviewed have an immediate need in this area. The state should recognize this risk and assist with identifying and implementing and supporting a DR solution
Adequate replacement hardware	• As computers die, a replacement is brought in from another classroom or lab. The district does not have a reliable backup system for hardware. • There is no formal policy and everything is reactionary in nature. There is no formal inventory management system so technical support staff are unable to proactively monitor hardware needs and challenges.	• Purchase and maintain a healthy supply of backup machines, batteries, keyboards and mice. • Create a formal hardware replacement policy. • Potentially give the older hardware to the disadvantaged families in the district.
Support and Replacement Strategy	• Currently the district does not have a technology refresh policy. • Old equipment just lies around and there is no formal plan on how to get rid of it.	• A formal strategic planning initiative is needed to review the current state situation and identify needs for the district in a variety of areas outside the scope of this assessment. The district staff has the skills to complete this assessment internally however, they don't have the time. The consultants recommend a formal plan be created to ensure infrastructure and computers are modernized on a consistent basis.

Teacher Readiness

Readiness Score	3.0

Area of Focus	Observations	Recommendations
Technical Proficiency of Staff	• The technology staff works hand in hand with district staff to ensure they know and are comfortable with using technology. • The Technology staff and teachers work together to research and find new ways to bring technology into the classroom • The staff is given multiple opportunities each month to learn new things and attend technology training	• Once the formal testing requirements are finalized the district needs to ensure all teachers are notified of testing requirements and any professional development promptly scheduled.
Turnover of Teachers	• The district has a marginal turnover rate for teachers. • Teachers have not expressed that technology is a reason for leaving the district. • The turnover of staff directly impacts the technology staff. The tech staff uses their limited training time/budget to get teachers up to speed on how to use technology and they routinely leave the district. The new teachers coming in are unable to take training because in many cases the professional development resources (people and money and time) are exhausted.	• The state should explore avenues for reducing the severe turnover rate in this district. It is putting the district and the schools and the students at a competitive disadvantage. • Additional professional development is needed to ensure new teachers coming in to REPLACE outgoing teachers are properly trained. • A study should be conducted to determine the impact on the STUDENTS.
Level of Technical Preparedness	• Teachers are well equipped in the classroom with technology. More seasoned teachers are reluctant to use the technology.	• More seasoned teachers should be surveyed to understand their reluctance to use technology in the classroom.
Availability to prepare for testing	• The wireless is unreliable, which makes preparing for online testing nearly impossible in the classroom. • Many schools have limited labs, so students have limited availability to use computers in the labs.	• District leadership needs to mandate dedicated time is allocated to focus on preparing for state and federal testing activities. The I/T staff needs to be involved to ensure all tasks and deliverables are completed in an

	• There is a great deal of uncertainty about the impact of the infrastructure and the staff to properly conduct testing on the existing infrastructure with the existing hardware.	efficient manner.
Other Concerns	• Teachers that have been in the district for many years tend to lean on the old way of teaching, instead of incorporating technology within the classroom. • There are multiple ways of teaching students of the same age. The "older ways" are still effective but the students are not integrating with the technology like their peers which COULD put them at a future competitive disadvantage	• Teachers need to be asked in a proactive manner what types of training they need.

Student Readiness

Readiness Score	2.5

Area of Focus		
Availability of Computer/Typing Classes for K-2	• K-2 students have the opportunity go to a computer lab once a week but do NOT have formal computer literacy/keyboarding classes.	• Keyboarding instruction needs to start prior to the 3rd grade. Formal keyboarding activities are necessary to ensure 3rd graders are prepared for the testing requirements.
Level of Poverty/Home Exposure to Computers	• The poverty rate is extremely high in the surrounding area. The district qualifies for all students to receive free and reduced lunch. • Most families in the area do not have Internet services. The cost of the service is extremely high. Students' exposure to the Internet is largely through the school. • There is a very real concern that students in this district may be at a competitive disadvantage over their peers in neighboring districts due to their high poverty rates, lack of computer proficiency at earlier ages and the lack of exposure to technology in the classroom.	• The fact that many of the district's students come from homes where heavy and consistent computer usage is unlikely only increases the need for formal computer literacy classes in the earlier grades. • The district should seriously explore giving the aging technology to the local families to allow students to become more familiar with keyboards and utilizing mice.
English as a Second Language Concerns	• There are a small percentage of students classified as English is the second language (ESL). • The district does not feel ESL students have experienced any issues with testing. • There is no Professional trained teacher with ESOL capabilities.	• The consultants recommend the district staff work closely with the schools to formally give the ESOL students an opportunity to take a practice test to ensure they are adequately prepared for the testing activities. Simulated testing will help identify any potential concerns in a proactive manner. • Adding a ESOL teacher to work with at risk ESOL students would greatly improve their testing taking skills as well as improving scores.

Availability of Sample Tests	• The district currently does online sample testing.	• DRC offers free sample tests that could be used to familiarize students with the online testing format
Other Concerns		

Funding Mechanisms

Readiness Score	2.0

Area of Focus	Observations	Recommendations
Maximizing e-Rate	• The district is maximizing it's usage of federal E-Rate funds. The staff proactively completes the paperwork and has full knowledge of the process.	• Ensure the district's strategy for utilizing current and future e-Rate funds are documented in the strategic plan. • More than one person needs to be trained and participate in the e-Rate process.
Ability to successfully manage the grant writing process.	• The Director of Technology has very limited time to research grants. • The district does not have anyone or the extra funds to hire someone who has the ability to write grants	• The district is leaving money on the table. The state will question why the district needs to receive state funds when potential federal funds are not being spent. It is in the district's best interest to immediately identify a source of knowledge to assist with grant writing. • We recommend collaborating with neighboring districts to share a resource to assist in this area. This is a common solution in many states.
Multiple resources knowledgeable in e-Rate and Grant Writing	• The director of technology currently fills out E-Rate.	• Multiple district staff needs to be familiar with the e-Rate process for checks and balances and backup scenarios. • A 3rd party contractor should be identified as a potential source of knowledge in case the Director of Technology leaves the district or falls ill. A backup solution is needed.
Other Concerns		

Strategic Planning

Readiness Score	2.0

Area of Focus	Observations	Recommendations
Technical Staff Collaborates with Administrative Staff to Determine Technology Needs	• The Director of Technology informs the administrative staff of the district's needs for upgraded technology. • The administrative staff is extremely supportive of the recommendations that come from the director of technology.	• The technical staff should work on cross-training activities. This is already taking place but thoughtful consideration into the roles and responsibilities of staff members will ensure proper coverage in all technical and support areas
Thoughtful analysis into how funds will be spent	• The technology staff has certain plans in place to build the correct technological infrastructure that is needed in the district. • Through collaborative efforts, teachers and students are working with technology staff to determine the best laptop for the district.	• Continued strategic planning efforts are required. Communicating to the school board and ensuring all parties are aware of the importance of consistent funding for technology and professional development is mandatory. • It's very important that the technology staff have a methodology for educating administrative staff on technology needs and recommendations. A formal process for QUANTIFYING why certain hardware or technology is acquired is needed to eliminate much of the emotion in these decisions
Teachers needs are considered top priority	• Technology staff has done an outstanding job of putting the needs of teachers before other issues. • Due to the lack of sufficient infrastructure, many teachers disregard the advice of the technology staff.	• Even though the small staff is doing a good job there is a shortage of staff. A dedicated technology coach is warranted to focus on the teachers and free up the other staff for more strategic activities.
The role of technology is agreed upon by all parties	• All ideas and suggestions are brought to the attention of the director of technology. This position is well respected by all areas of the district and I/T is actively engaged in all	• The district needs to continue the current efforts in place, however survey teachers and staff to see what kinds of professional development they would like to

	decision-making processes. • Administrators and staff understand they must have everything approved through the director of technology.	see. • Additional professional development resources (people, money, time) are easily quantifiable.
Proper amount of professional development	• The desire for more training is apparent. All PD does not necessarily require additional funds, however; a combination of Train-the-Trainer methods and additional funds would be beneficial.	• Survey of teachers and staff to see what kinds of professional development they would like to see. • Additional professional development resources (people, money, time) are easily quantifiable.
Implementation, Distribution and Enforcement of Testing Policies.	• The district staff is very busy. Formal policies and procedures for current testing requirements are not up to date. There is a plan to implement them but as of the time of the assessment this was not completed.	• Everything dealing with online testing must be coordinated with the director of technology and the testing coordinator.

Readiness of Technical Staff to Support Online Testing

Readiness Score	2.0

Area of Focus	Observations	Recommendations
Number of support technical support staff	• Currently the technology department has 2 staff members including the director of technology. • All of the staff are heavily involved in the day-to-day support of the district technology and have little extra time for any additional services. • The district staff appears to be reactionary in nature due to the heavy work volume.	• As online testing grows, Bamberg 1 will need to increase the technology staff. Currently it takes the entire staff to man online testing district wide. Help desk tickets increase during current testing due to the lack of help. • Formal details of roles and responsibilities are needed to help map out where additional skill sets might need to be inserted into the support model.
Technical skills and proficiency of support staff	• Each member of the team is extremely educated in technology and has well versed certification. The district has done an excellent job attracting skilled labor. • The technology staff combined has over 50 years of IT experience.	• Retention must be a focus for district leadership. Losing any of these key IT resources could cause significant damage to the existing support model.
Availability of staff to proactively engage with the teachers and administrative staff	• The technology staff faces issues daily with tackling everyday operational duties and handling issues throughout the district. • Many staff members wear multiple hats requiring them to work overtime and do research on their personal time.	• Administration needs to pay attention to hours worked and burnout. The existing staff appears to be working significant overtime. This is a risk and needs to be monitored. • Potentially having resources inside the schools serve as the front line for help desk items might be needed. Training of school resources OR students could help reduce the help desk ticket volume and free up I/T staff to be more strategic.
Ability of staff to assist with professional	• The district does not have teachers throughout the district to serve as a first line of defense. • The district offers centralized and de-centralized	• The IT staff needs to take some time and create a focused assessment to examine how to improve the help desk support model. Where additional resources

development efforts	professional development.	could be identified and ultimately trained to assist? Should students be leveraged? Could additional training help reduce some of the more common issues?
Risk of Single Point of Failure. If a key resource leaves will testing become at risk?	• The Director of Technology has such a passion and drive to see the success of the technology in Bamberg One, replacing his drive and passion would be very hard. • He is known for working late nights, giving up entire weekends and missing out on vacation time, to ensure the district technology department is running without issues. The current Director of Technology is in a "Lead" role in several critical areas and there is no formal backup plan. The district is working on cross training and documenting roles and responsibilities but if this key resource were to fall ill or be unavailable during the testing process it would significantly impact the ability of the district to complete the necessary testing steps.	• Develop a succession plan by identifying and cross training existing staff. • Develop a detailed position description in the event the IT Director position should need to be posted. • Long Term planning (5-10years) for the replacement of IT Staff due to illness and Retirement. • Additional IT Staff to include a Data Coordinator.

Additional Consultant Observations

Highlighted below are the most frequently cited strengths of the school district, which can be used as a foundation for creating a roadmap to address any areas of concern. The items in the table are rank-ordered according to the frequency with which they were mentioned in the interviews. Multiple points of engagement took place with a minimum of two analysis team members involved with every district.

Rank	Strengths	Common Themes
1	Willingness to improve	Everyone in the district strives to work together to see that improvements are made not only yearly but on a daily basis.
2	Attitude / Enthusiasm	Bamberg 1 makes the best of all situations. The attitude of the district is whatever it takes to get it done, they will do it.
3	Work well together	The entire district is more than co-workers, they are a family unit. They thoughtfully plan and execute everything in the best interest of the children of Bamberg 1.
4	Dedication	The technology staff gives up many hours with family and friends to ensure every staff member and child has the up to date technology and teachers know how to utilize the tools in their classrooms.

Commonly Cited Concerns

Listed below are the most frequently cited concerns about testing that were documented over the course of the analysis process.

Rank	Concern	Sample Answers
1	Budget	The technology department has a very limited budget. Without careful planning the district may not be able to upgrade or refresh hardware as needed each year.
2	Schedule / timeline	Bamberg 1 technology staff is stretched thin. They have very limited time to plan far in advance due to daily operations.
3	Staffing Levels and Workload	This is a major area of concern. Currently the Director of Technology manages everything for technology. If something happens to him, the district will face many challenges with testing.
4	Lack of Professional Development	The technology staff does not have the time to do professional development.
5	Disaster Recovery	Like most districts, a backup is done of the system, however nothing is offsite or in a cloud.

District's Inventory of Readiness Needs

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Facilities	Space/Testing Rooms	TBD	2	250,000.00	TBD	July 2017
	Air Conditioning Unit	Various	4	50,000.00	TBD	July 2017
	Roof/Ceiling Repair	TBD	1	35,000.00	TBD	July 2017
	Desks	Virco	108	27,000.00	TBD	July 2017
	Chairs	Virco	240	17,520.00	TBD	July 2017
	Other	?	?	?	?	?

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Infrastructure	Bandwidth	SCDE	500 MB	350/month	TBD	July 2017
	Router	TBD	4	35,000.00	None	July 2017
	Switches	Various	6	36,000.00	TBD	July 2017
	Access Points	Advanced Productivity	70	50,000.00	TBD	July 2017
	Cabling	CMI	100	10,000.00	TBD	July 2017
	Installation/Testing	TBD	7	10,000.00	TBA	July 2017
	Disaster Recovery	Barracuda	1	60,000	TBD	July 2017
	Other	NA	NA	NA	NA	NA

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Hardware Testing Computers	Laptops	Advanced Productivity Computing, Inc	120	155,930.00	TBD	July 2017
	Memory	TBD	180	9,000.00	TBD	July 2017
	Operating System Upgrade	NA	NA	NA	NA	NA
	Monitors					
	Computer Carts	Advanced Productivity Computing, Inc	3	5,037.00	TBD	July 2017
	Extra Batteries	Advanced Productivity Computing, Inc	120	6,000.00	TBD	July 2017
	Installation/Testing	TBD	200 Hrs	10,000		
	Other	NA	NA	NA	**NA**	NA

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Teacher Readiness	Type of training needed by grade and by topic	Various	20 Sessions	10,000.00	TBD	July 2017
	Teacher's Knowledge of Online Testing Requirements including security	Various	10 Sessions	5,000.00	TBD	July 2017
	Other					

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Student Readiness	Computer Literacy Curriculum	Various	1	4,000.00	TBD	July 2017
	Computers needed for training	None	None	None	None	
	Practice Tests for at risk students (i.e. lack of computer experience, English as a second language..)		3	1,000	TBD	
	Other					

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Funding Mechanisms	Assistance/Training for Writing Grants	NA	NA	NA	NA	
	Assistance/Training to manage e-Rate	NA	NA	NA	NA	
	Other					

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Strategic Planning	Consulting Assistance to educate staff in the strategic planning areas	Various	2 Sessions	1,000.00	TBD	July 2017
	Formal Training of Staff					
	Other					

Category	Specific Need	Vendor	Quantity	Estimated Cost	Potential Funding Source	Date Needed
Technical Support	Consulting Assistance to help in specific areas	Ramtec Consulting	1	50,000.00	TBD	July 2017
	Additional resources	TBD	2	65,000.00	TBD	July 2017
	Other					

Strategic Roadmap

This section will provide an overview of the specific action items the district should focus on to improve the readiness of each area discussed in this report. The Roadmap is broken down into measurable tasks and deliverables to

1-Month Plan

- **Develop a plan to deploy Access Points in each 1-to-1 classroom for 2016-17**
- **Determine the memory needs of all systems planned to be used for testing**
- **Coordinate the procurement of needed systems to meet the 2016-17 school year**

3-Month Plan

- **Acquire part-time resources to begin the updating process of existing systems**
- **Have all new technology in place prior to the start of 2016-17 school year**
- **Prepare some online training for teaching and administrative staff to address new technology**

6-Month Plan

- **Request the expansion of the Internet access for the district**
- **Replace and/or add high speed switches in the IDF closets to improve wireless speed**
- **Add 70 new access points across the district for testing access**
- **Assess the need to expand the technology staff**

12-Month Plan

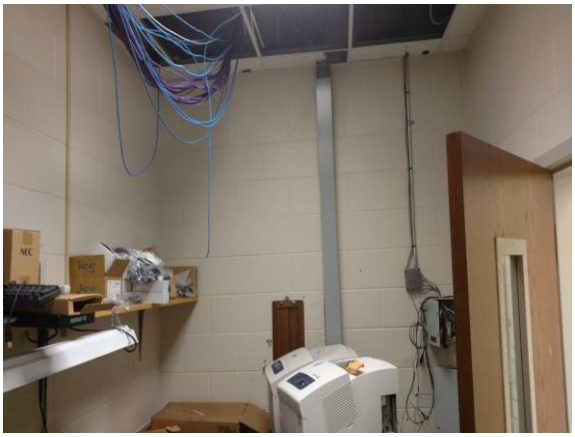
- **Add robust backup system for rapid recovery of data and services**
- **Work with district administration to address any safety or environmental problems in testing and equipment areas**
- **File for E-rate requesting additional switches and access points and cabling**
- **Work with administration to procure staff development and technology training**

18-Month Plan

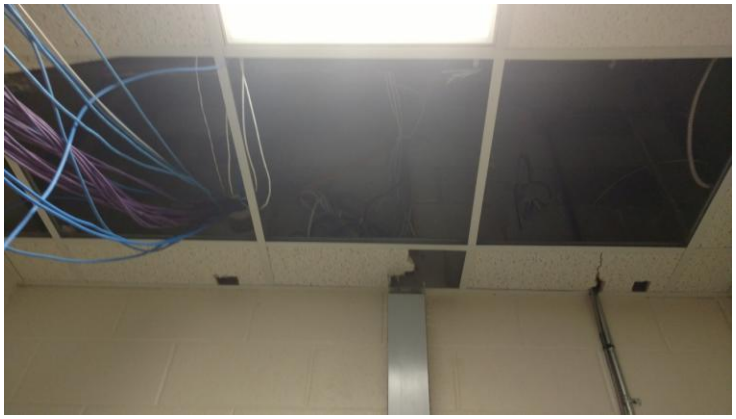
- **Replace or update all labs to meet the testing requirements in the 2017-18 school year.**
- **Procure proper software to monitor the network utilization and balance**
- **Address the technology plan and strategic plan and adjust as required.**
- **Continue to insure that all staff and teachers receive training on all testing procedures and new technology.**

APPENDIX

Pictures of District

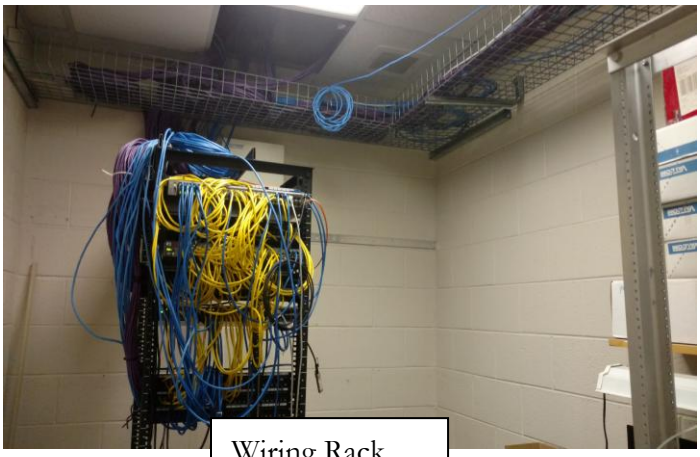


Data Closet missing ceiling



Missing ceiling in data closet

Data Closet



Wiring Rack